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④

**D119-796-241TRN**  
**Job Sheet 192955**



**Part No:** D119-796-241TRN

**Job Qty:** 1 pcs

**Part Name:** Crosstube Turning Detail



**Part Weight:** 0 lbs

**Status:** New

**Priority:** Medium

**Job Created:** 4/4/19

**Job Tracking No:**

**Due Date:** 4/18/19

**Created By:** Marie Lajeunesse

**Type:** Stock

**Description:**

**Note:** DWG REV J IPP REV A RQ 14/05/27 VERIFIED BY DD IPP REV:B 16.05.04 AS PER DWG REV.I DD  
VERF:JLM

**Ship Via:**

### Bill of Materials

### Job Routing

| Op<br>No | Operation            | Qty   | Start Date | Due<br>Date | Standard     |            | Workcenter/Supplier   |           | DAS  | Sign-off   |
|----------|----------------------|-------|------------|-------------|--------------|------------|-----------------------|-----------|------|------------|
|          |                      |       |            |             | Setup<br>Hrs | Run<br>Hrs | Workcenter / Supplier | Lead Time |      |            |
| 100      | Mori Seiki TL-40 - 1 | 1 pcs | 4/18/19    | 4/18/19     | 1.77         | 1.72       | Mori Seiki TL-40 - 1  |           | 66   | 2019-05-14 |
| 110      | QC 2                 | 1 pcs | 4/18/19    | 4/18/19     | 0.00         | 0.00       | QC 2 - 1              |           | 9-89 |            |
|          |                      |       |            |             |              |            | QC 2 - 12             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 14             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 17             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 19             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 2              |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 20             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 22             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 23             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 25             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 32             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 33             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 35             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 39             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 4              |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 40             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 44             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 45             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 48             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 49             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 50             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 51             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 52             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 56             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 57             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 62             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 63             |           |      |            |
|          |                      |       |            |             |              |            | QC 2 - 8              |           | DAS  |            |
|          |                      |       |            |             |              |            | QC 2 - 66             |           | 66   | 2019-05-14 |
|          |                      |       |            |             |              |            |                       |           | 9-80 |            |

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|     |                            |       |         |           |                            |               |
|-----|----------------------------|-------|---------|-----------|----------------------------|---------------|
|     |                            |       |         |           | QC 2 - 64                  |               |
|     |                            |       |         |           | QC 2 - 65                  |               |
|     |                            |       |         |           | QC 2 - 5                   | DAS           |
| 120 | Mori Seiki TL-40 - 1 - B4B | 1 pcs | 4/18/19 | 0.00 1.72 | Mori Seiki TL-40 - 1 - B4B | 66 2019-05-15 |
| 130 | QC 2                       | 1 pcs | 4/18/19 | 0.00 0.00 | QC 2 - 1                   | 9-89          |
|     |                            |       |         |           | QC 2 - 12                  |               |
|     |                            |       |         |           | QC 2 - 14                  |               |
|     |                            |       |         |           | QC 2 - 17                  |               |
|     |                            |       |         |           | QC 2 - 19                  |               |
|     |                            |       |         |           | QC 2 - 2                   |               |
|     |                            |       |         |           | QC 2 - 20                  |               |
|     |                            |       |         |           | QC 2 - 22                  |               |
|     |                            |       |         |           | QC 2 - 23                  |               |
|     |                            |       |         |           | QC 2 - 25                  |               |
|     |                            |       |         |           | QC 2 - 32                  |               |
|     |                            |       |         |           | QC 2 - 33                  |               |
|     |                            |       |         |           | QC 2 - 35                  |               |
|     |                            |       |         |           | QC 2 - 39                  |               |
|     |                            |       |         |           | QC 2 - 4                   |               |
|     |                            |       |         |           | QC 2 - 40                  |               |
|     |                            |       |         |           | QC 2 - 44                  |               |
|     |                            |       |         |           | QC 2 - 45                  |               |
|     |                            |       |         |           | QC 2 - 48                  |               |
|     |                            |       |         |           | QC 2 - 49                  |               |
|     |                            |       |         |           | QC 2 - 50                  |               |
|     |                            |       |         |           | QC 2 - 51                  |               |
|     |                            |       |         |           | QC 2 - 52                  |               |
|     |                            |       |         |           | QC 2 - 56                  |               |
|     |                            |       |         |           | QC 2 - 57                  |               |
|     |                            |       |         |           | QC 2 - 62                  |               |
|     |                            |       |         |           | QC 2 - 63                  |               |
|     |                            |       |         |           | QC 2 - 8                   | DAS           |
|     |                            |       |         |           | QC 2 - 66                  | 66 2019-05-15 |
|     |                            |       |         |           | QC 2 - 64                  | 9-89          |
|     |                            |       |         |           | QC 2 - 65                  |               |
|     |                            |       |         |           | QC 2 - 5                   |               |
| 140 | QC 8                       | 1 pcs | 4/18/19 | 0.00 0.00 | QC 8 - 12                  |               |
|     |                            |       |         |           | QC 8 - 14                  |               |
|     |                            |       |         |           | QC 8 - 17                  |               |
|     |                            |       |         |           | QC 8 - 20                  |               |
|     |                            |       |         |           | QC 8 - 25                  |               |
|     |                            |       |         |           | QC 8 - 3                   |               |
|     |                            |       |         |           | QC 8 - 32                  |               |
|     |                            |       |         |           | QC 8 - 33                  |               |
|     |                            |       |         |           | QC 8 - 35                  |               |
|     |                            |       |         |           | QC 8 - 39                  |               |
|     |                            |       |         |           | QC 8 - 4                   |               |
|     |                            |       |         |           | QC 8 - 44                  |               |
|     |                            |       |         |           | QC 8 - 45                  |               |
|     |                            |       |         |           | QC 8 - 49                  |               |
|     |                            |       |         |           | QC 8 - 58                  |               |
|     |                            |       |         |           | QC 8 - 8                   |               |
|     |                            |       |         |           | QC 8 - 9                   |               |
|     |                            |       |         |           | QC 8 - 68                  |               |
|     |                            |       |         |           | QC 8 - 67                  | GP 19-05-23   |
|     |                            |       |         |           | QC 8 - 1 (A)               |               |
|     |                            |       |         |           | QC 8 - 47                  |               |
|     |                            |       |         |           | QC 8 - 40                  |               |
|     |                            |       |         |           | QC 8 - 52                  |               |



|     |                                    |       |         | QC 8 - 23 |                        |
|-----|------------------------------------|-------|---------|-----------|------------------------|
| 145 | <b>Crosstubes - 2 - B4B</b>        | 1 pcs | 4/18/19 | 0.00 0.45 | Crosstubes - 1 - B4B   |
|     |                                    |       |         |           | Crosstubes - 2 - B4B   |
|     |                                    |       |         |           | Crosstubes - 3 - B4B   |
|     |                                    |       |         |           | Crosstubes - 4 - B4B   |
| 150 | <b>Crosstubes - 3 - B4B</b>        | 1 pcs | 4/18/19 | 0.00 0.33 | Crosstubes - 1 - B4B   |
|     |                                    |       |         |           | Crosstubes - 2 - B4B   |
|     |                                    |       |         |           | Crosstubes - 3 - B4B   |
|     |                                    |       |         |           | Crosstubes - 4 - B4B   |
| 160 | <b>QC 7</b>                        | 1 pcs | 4/18/19 | 0.00 0.00 | QC 7 - 10              |
|     |                                    |       |         |           | QC 7 - 13              |
|     |                                    |       |         |           | QC 7 - 14              |
|     |                                    |       |         |           | QC 7 - 15              |
|     |                                    |       |         |           | QC 7 - 17              |
|     |                                    |       |         |           | QC 7 - 18              |
|     |                                    |       |         |           | QC 7 - 19              |
|     |                                    |       |         |           | QC 7 - 2               |
|     |                                    |       |         |           | QC 7 - 28              |
|     |                                    |       |         |           | QC 7 - 3               |
|     |                                    |       |         |           | QC 7 - 30              |
|     |                                    |       |         |           | QC 7 - 34              |
|     |                                    |       |         |           | QC 7 - 36              |
|     |                                    |       |         |           | QC 7 - 37              |
|     |                                    |       |         |           | QC 7 - 41              |
|     |                                    |       |         |           | QC 7 - 47              |
|     |                                    |       |         |           | QC 7 - 48              |
|     |                                    |       |         |           | QC 7 - 51              |
|     |                                    |       |         |           | QC 7 - 58              |
|     |                                    |       |         |           | QC 7 - 59              |
|     |                                    |       |         |           | QC 7 - 60              |
|     |                                    |       |         |           | QC 7 - 9               |
|     |                                    |       |         |           | QC 7 - 68              |
|     |                                    |       |         |           | QC 7 - 50              |
|     |                                    |       |         |           | QC 7 - 67              |
|     |                                    |       |         |           | QC 7 - 40              |
| 170 | <b>Packaging 3-1 - Stock - B4B</b> | 1 pcs | 4/18/19 | 0.00 0.00 | Packaging 3 - 1 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 2 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 3 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 4 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 5 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 6 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 7 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 8 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 9 - B4B  |
|     |                                    |       |         |           | Packaging 3 - 10 - B4B |
|     |                                    |       |         |           | Packaging 3 - 11 - B4B |
|     |                                    |       |         |           | Packaging 3 - 12 - B4B |
|     |                                    |       |         |           | Packaging 3 - 13 - B4B |
|     |                                    |       |         |           | Packaging 3 - 14 - B4B |
|     |                                    |       |         |           | Packaging 3 - 15 - B4B |
|     |                                    |       |         |           | Packaging 3 - 16 - B4B |
|     |                                    |       |         |           | Packaging 3 - 17 - B4B |
|     |                                    |       |         |           | Packaging 3 - 18 - B4B |
|     |                                    |       |         |           | Packaging 3 - 19 - B4B |
|     |                                    |       |         |           | Packaging 3 - 20 - B4B |
|     |                                    |       |         |           | Packaging 3 - 21 - B4B |
|     |                                    |       |         |           | Packaging 3 - 22 - B4B |
|     |                                    |       |         |           | Packaging 3 - 23 - B4B |
|     |                                    |       |         |           | Packaging 3 - 24 - B4B |

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BEB19-06-22

DAS  
47  
9-89

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|--------------------------|------------------------|-----------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 25 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 26 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 27 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 28 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 29 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 30 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 31 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 32 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 33 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 34 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 35 - B4B |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | Packaging 3 - 36 - B4B |                 |
| 180 QC 21 - FG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 pcs              | 4/18/19      | 0.00 0.00                | QC 21 - FG - 21        | DAS             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | QC 21 - FG - 70        | JUL 0 5 2019 70 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                          | QC 21 - FG - 53        | 9-89            |
| <p>Part Op 100 - 1-Fill tube with sand &amp; install plugs on both ends as per Folio FB298 2-Turn first side as per Folio FB298</p> <p>Descriptions: 110 - (QC2- Inspect parts off machine FAI/FAIB)</p> <p>120 - 1-Turn second side as per Folio FB298</p> <p>130 - (QC2- Inspect parts off machine FAI/FAIB)</p> <p>140 - (QC8- Inspect parts - second check)</p> <p>145 - GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.</p> <p>150 - 1- handfinish X-TUBE INSIDE AND OUT</p> <p>160 - (QC7-Inspect Chemical Conversion Coat)</p> <p>170 - (Identify as per dwg &amp; Stock Location: _____) LOCATION : LG014</p> <p>180 - (QC21- Final Inspection - Work Order Release)</p> |                    |              |                          |                        |                 |
| <b>Job BOM</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |              |                          |                        |                 |
| Part / Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Component Name     | Quantity     | Operation                | Container              |                 |
| D6023-106                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Crosstube Material | 1 pcs (1 ea) | 100-Mori Seiki TL-40 - 1 | S013837                |                 |
| <b>Job Allocations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |              |                          |                        |                 |
| Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Component Part     | Required     | Inventory                | Allocated              |                 |
| 100-Mori Seiki TL-40 - 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | D6023-106          | 1            | 18                       | 0                      |                 |
| <b>Part Specifications</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |              |                          |                        |                 |
| Specifications could not be found.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |              |                          |                        |                 |



Container No: S181241



Part: D119 - 796 - 241TRN

Job No: 192955

Serial No/Batch: S181241

Revision:

Inspector:

Exp Date:

Instructions:

Dart Aerospace Ltd.  
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Date: 05/14/19

Plex 4/4/19 11:43 AM Dart.lajeunesse.marie



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|                                                         |                                     |
|---------------------------------------------------------|-------------------------------------|
| <b>DART AEROSPACE LTD</b>                               | <b>Work Order:</b> 192955           |
| <b>Description:</b> Crosstube Assembly (AW119 MKII Aft) | <b>Part Number:</b> D119-796-241TRN |
| <b>Inspection Dwg:</b> D119-796-241 <b>Rev:</b> J       | <b>Page 1 of 2</b>                  |

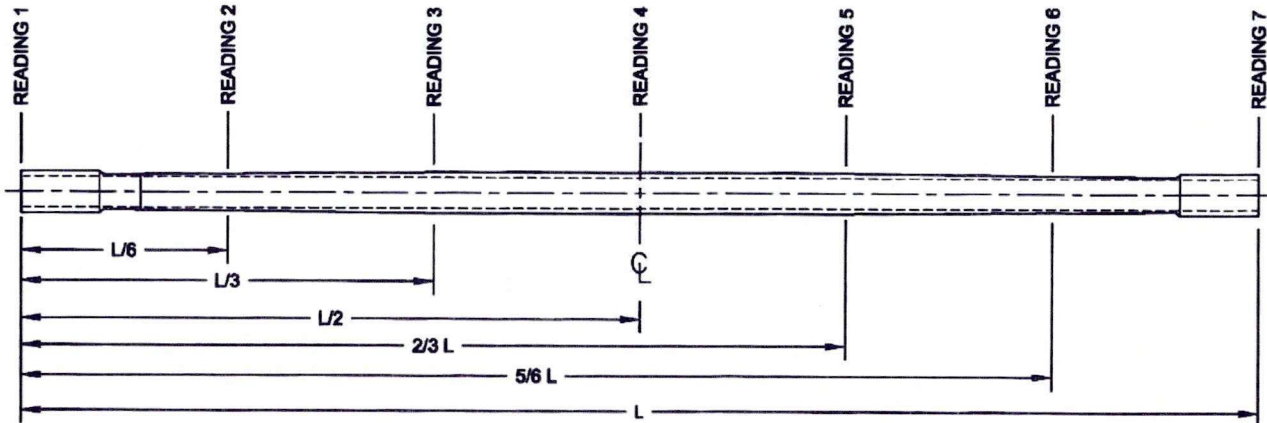
### FIRST ARTICLE INSPECTION CHECKLIST

|        | Inspection Sheet<br>Drawing Dimension | Tolerance     | Actual<br>Dimension | Accept | Reject | Method of<br>Inspection | Comments |
|--------|---------------------------------------|---------------|---------------------|--------|--------|-------------------------|----------|
| SIDE A | 5.88                                  | +/-0.030      | 5.885               | ✓      |        | CNC-08                  |          |
|        | 2.516                                 | +0.005/-0.000 | 2.521               | ✓      |        | CNC-04                  |          |
|        | 2.626                                 | +0.005/-0.000 | 2.631               | ✓      |        |                         |          |
|        | 2.627                                 | +0.005/-0.000 | 2.632               | ✓      |        |                         |          |
|        | 2.798                                 | +0.005/-0.000 | 2.803               | ✓      |        |                         |          |
|        | 2.799                                 | +0.005/-0.000 | 2.802               | ✓      |        |                         |          |
|        | 2.989                                 | +0.005/-0.000 | 2.994               | ✓      |        |                         |          |
|        | 3.191                                 | +0.005/-0.000 | 3.191               | ✓      |        | CNC-05                  |          |
|        | 3.200                                 | +0.005/-0.000 | 3.205               | ✓      |        |                         |          |
|        |                                       |               |                     |        |        |                         |          |
| SIDE B | 5.88                                  | +/-0.030      | 5.884               | ✓      |        | CNC-08                  |          |
|        | 2.516                                 | +0.005/-0.000 | 2.520               | ✓      |        | CNC-04                  |          |
|        | 2.626                                 | +0.005/-0.000 | 2.630               | ✓      |        |                         |          |
|        | 2.627                                 | +0.005/-0.000 | 2.632               | ✓      |        |                         |          |
|        | 2.798                                 | +0.005/-0.000 | 2.803               | ✓      |        |                         |          |
|        | 2.799                                 | +0.005/-0.000 | 2.803               | ✓      |        |                         |          |
|        | 2.989                                 | +0.005/-0.000 | 2.994               | ✓      |        |                         |          |
|        | 3.191                                 | +0.005/-0.000 | 3.196               | ✓      |        | CNC-05                  |          |
|        | 3.200                                 | +0.005/-0.000 | 3.205               | ✓      |        |                         |          |
|        |                                       |               |                     |        |        |                         |          |
|        | 105.71                                | +/-0.020      | 105.71              | ✓      |        | Tape                    |          |

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|                                                         |                                     |
|---------------------------------------------------------|-------------------------------------|
| <b>DART AEROSPACE LTD</b>                               | <b>Work Order:</b> 192955           |
| <b>Description:</b> Crosstube Assembly (AW119 MKII Aft) | <b>Part Number:</b> D119-796-241TRN |
| <b>Inspection Dwg:</b> D119-796-241 Rev: J              | <b>Page 2 of 2</b>                  |

### WALL THICKNESS MEASUREMENT



| Location              | WALL THICKNESS MEASUREMENT (IN) |      |      |      | Deviation<br>$\Delta w$<br>(max-min) | TOLERANCE |
|-----------------------|---------------------------------|------|------|------|--------------------------------------|-----------|
|                       | w1                              | w2   | w3   | w4   |                                      |           |
| READING 1<br>L= 0"    | .130                            | .130 | .125 | .126 | .005                                 | 0.030"    |
| READING 2<br>L=17.618 | .205                            | .198 | .196 | .205 | .009                                 |           |
| READING 3<br>L=35.236 | .302                            | .304 | .304 | .303 | .002                                 | 0.063"    |
| READING 4<br>L=52.855 | .482                            | .471 | .471 | .483 | .012                                 |           |
| READING 5<br>L=70.473 | .297                            | .300 | .307 | .304 | .010                                 |           |
| READING 6<br>L=88.092 | .202                            | .203 | .199 | .200 | .004                                 | 0.030"    |
| READING 7<br>L=105.71 | .127                            | .125 | .126 | .130 | .005                                 |           |

#### Calibration Result

Actual Block Thickness: 100-500

Sitescan 250 Measured Thickness: 100-500

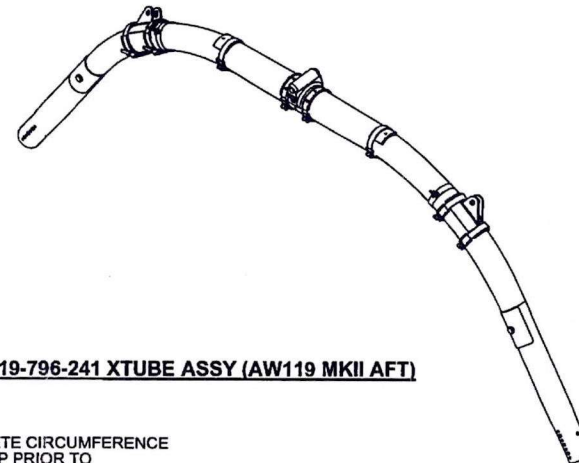
|                                    |                                   |                              |
|------------------------------------|-----------------------------------|------------------------------|
| <b>Measured by:</b> DAS 66<br>9-89 | <b>Audited by:</b> DAS 67<br>9-89 | <b>Preliminary Approval:</b> |
| <b>Date:</b> 2019-05-15            | <b>Date:</b> 19-05-23             | <b>Date:</b>                 |

| Rev | Date     | Change                                               | Revised by | Approved |
|-----|----------|------------------------------------------------------|------------|----------|
| B   | 15.03.12 | Dimensions updated per Dwg Rev F (P/O D119-796-201)  | KJ         |          |
| C   | 15.04.14 | Tolerance dimensions revised on Wall Thickness table | KJ         |          |
| D   | 15.05.14 | Tolerances revised per Dwg Rev G                     | KJ         |          |
| E   | 15.09.09 | Dwg Rev updated                                      | KJ         |          |
| F   | 16.05.27 | Dwg Rev updated                                      | KJ         |          |
| G   | 17.07.12 | Dwg Rev updated                                      | KJ         |          |
| H   | 18.05.24 | Tolerance dimensions revised on Wall Thickness table | MG         |          |



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SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 192455 nco  
19-04-04

**D119-796-241 XTUBE ASSY (AW119 MKII AFT)**



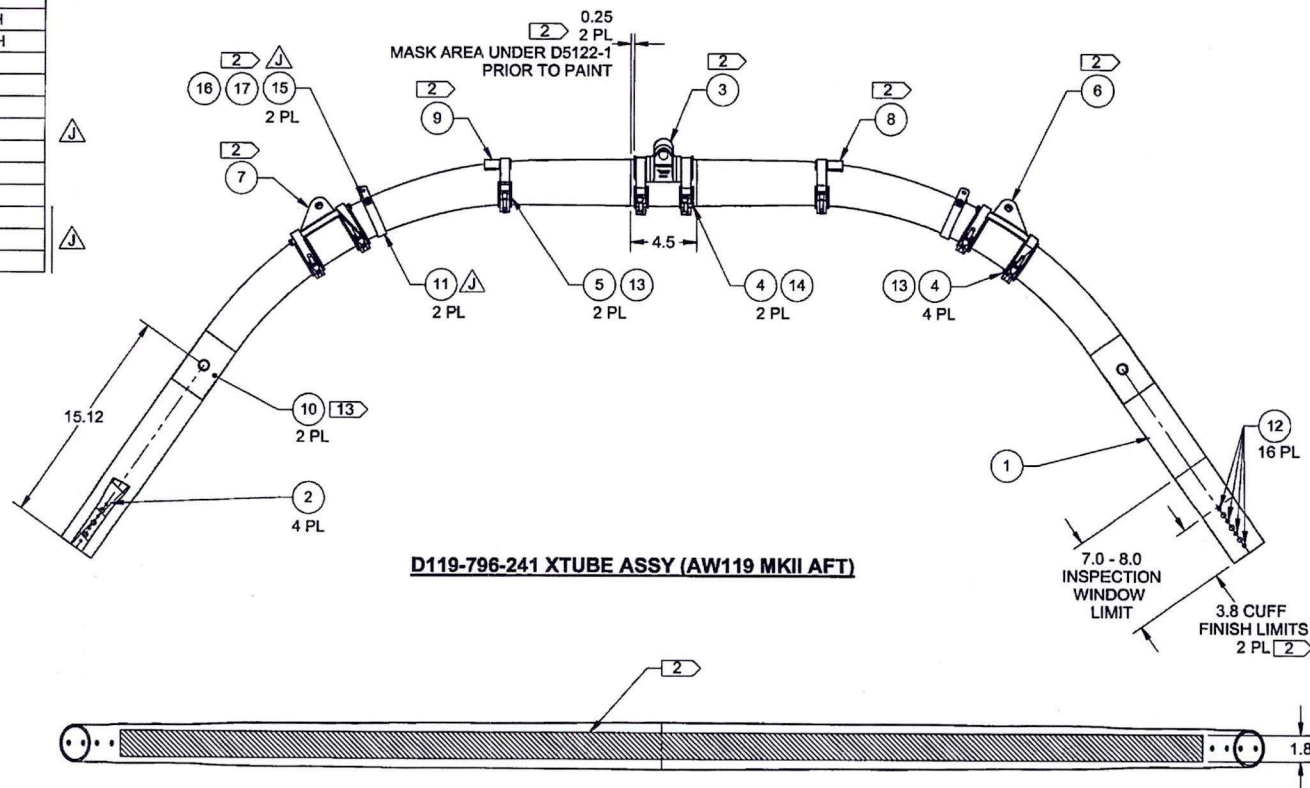
**NOTES:**

- 1) MATERIAL: N/A
- 2) FINISH: MASK D5134-041/-042 DAMPER SUPPORT ASSEMBLIES, CUFFS, D5136-1/-2 CONTACT PADS, THE COMPLETE CIRCUMFERENCE OF THE TUBE UNDER THE D5122-1 CENTER SUPPORT AND THE TAB ON THE D5515-1 GROUNDING CLAMP PRIOR TO APPLICATION OF CLEAR COAT/PAINT.  
IF NECESSARY TOUCH UP PRIMER ON OUTSIDE OF CROSSTUBE PER DART QSI 005 4.2.  
APPLY MATTE CLEAR COAT TO THE UNDERSIDE OF CROSSTUBE AS SHOWN (B4-2, HATCHED AREA) PER QSI 005 4.2.  
MASK THE UNDERSIDE OF CROSSTUBE AS SHOWN (B4-2, HATCHED AREA).  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-796-241" AND BATCH NUMBER  
ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 26.26 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE.  
THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) INSTALL D5122-1 CENTER SUPPORT HAND TIGHT ONLY. DO NOT TORQUE. INSTALL RED TAG TO INDICATE "D5122-1 CENTER SUPPORT MUST BE BONDED PER IIN-D119-796 PRIOR TO FLIGHT".
- 10) PRIOR TO FINISHING, ABRASE MATING SURFACES OF D5136-1/-2 AND SURFACE OF CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH 'N' WIPE DEGREASER. APPLY A 0.100" MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5136-1/-2 CONTACT PADS AND INSTALL AT AN 8.4" OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL MS21920-25 CLAMPS AND D5123-5 CLAMP CUSHIONS WHILE WET. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY. THE NUT HAS NOT BOTTOMED-OUT AFTER TORQUING AND THE NUT IS FACING AFT.
- 12) PRIOR TO FINISHING, POSITION AND INSTALL D5134-041/-042 DAMPER SUPPORTS USING JIG DT10085. ABRASE MATING SURFACES OF THE D5134-041/-042 DAMPER SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH 'N' WIPE DEGREASER. APPLY A 0.100" MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5134-041/-042. INSTALL MS21920-25 CLAMPS AND D5123-1 CLAMP CUSHIONS WHILE WET. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS. ENSURE THAT THE MS21920 CLAMPS ARE POSITIONED AS SHOWN IN DETAIL C.
- 13) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-043 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH 'N' WIPE DEGREASER. INSTALL D5152-043 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.100" MIN THK LOCATE D5152-043 USING TOOL DT10112.
- 14) INSTALL THE D5515-1 GROUNDING CLAMP AND ASSOCIATED HARDWARE PER DETAIL "C" PRIOR TO FINISHING. TORQUE THE MS21042-3 NUT 12-15 IN-LB. COMPLETELY SEAL THE EDGES OF THE CLAMP USING PROSEAL 890.
- 15) CARRY OUT A RESISTANCE CHECK BETWEEN THE D5515-1 GROUNDING CLAMP AND ANY UNPAINTED SECTION OF THE CROSSTUBE IN ACCORDANCE WITH AC43-13-1B CHAPTER 11. MAXIMUM RESISTANCE IS 3 MEGOHMS.

|            |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                          |              |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| J          | ADD NOTE 14 & 15 ON SHT 1, ADD PAINT/PRIMER MASKING LOCATIONS, REVISE NOTES ON SHT 1 & 4, REVISE BOM ON SHT 2 TO ADD GROUNDING CLAMP AND ASSOCIATED HARDWARE. REF PAR 17-580                                                                                    | ML                                                                                                                                                                                                                                                                       | 17.02.10     |
| I          | D8023-106 MATERIAL REPLACES D8009-106. D5136-1/-2 & D5134-041/-042 NOW INSTALLED ON PRIMER.                                                                                                                                                                     | AP                                                                                                                                                                                                                                                                       | 15.10.13     |
| H          | NOTE 9 RE-WRITTEN. BONDING INSTRUCTIONS MOVED TO IIN. SEE PREVIOUS REV FOR DETAILS.                                                                                                                                                                             | AP                                                                                                                                                                                                                                                                       | 15.07.02     |
| G          | FINISHING ORDER ADJUSTED. UPDATE BEND TOLERANCE AND TRN DETAIL TOLERANCE TO MATCH D119-796-141 DWG                                                                                                                                                              | AP                                                                                                                                                                                                                                                                       | 15.04.24     |
| F          | REMOVED PRIMER/PAINT ON CUFFS, 2.516 WAS 2.500 (C8-5)                                                                                                                                                                                                           | AP                                                                                                                                                                                                                                                                       | 15.02.03     |
| E          | D5152-043 WAS D5150-3, SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER                                                                                                                                                                                             | DB                                                                                                                                                                                                                                                                       | 15.01.15     |
| D          | ADD D5150-3 STEP POST (2X). MOVED INSPECTION WINDOW DETAIL TO SHT 1, MODIFIED NOTES ON SH 1 & 3                                                                                                                                                                 | DB                                                                                                                                                                                                                                                                       | 14.11.25     |
| C          | CR3212-4-07 RIVETS WAS CR3212-4-05 RIVETS, RADIUS BLOCK WAS NUT PLATE ASSEMBLY (BOM), REMOVED 7.5 DEG CUFF HOLE OFFSET (A1-3), REDUCED CUFF DIA TO 2.500 (C8-5), ADD INSPECTION WINDOW                                                                          | AP                                                                                                                                                                                                                                                                       | 14.10.23     |
| B          | ORIENTATION OF D5122-1 CENTER SUPPORT WAS CORRECTED. D5123-5 ADDED UNDER D5136-1/-2 CONTACT PADS. ADDED D2873-043 NUT PLATE ASSY & CR3212-4-05 RIVETS. ADDED REFERENCE TO SKIDTUBES FOR LOCATING CUFF HOLES. RE-ORGANIZED NOTES, REMOVED REDUNDANT INFORMATION. | AP                                                                                                                                                                                                                                                                       | 14.09.08     |
| A          | NEW ISSUE                                                                                                                                                                                                                                                       | AP                                                                                                                                                                                                                                                                       | 14.08.07     |
| REV.       | DESCRIPTION                                                                                                                                                                                                                                                     | BY                                                                                                                                                                                                                                                                       | DATE         |
| DESIGN     | AP                                                                                                                                                                                                                                                              | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                 |              |
| DRAWN      | ML                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                          |              |
| CHECKED    | JMH                                                                                                                                                                                                                                                             | DRAWING NO.                                                                                                                                                                                                                                                              | REV. J       |
| MFG. APPR. | DP                                                                                                                                                                                                                                                              | <b>D119-796-241</b>                                                                                                                                                                                                                                                      | SHEET 1 OF 7 |
| APPROVED   | WM                                                                                                                                                                                                                                                              | TITLE                                                                                                                                                                                                                                                                    | SCALE        |
| DE APPR.   | DS                                                                                                                                                                                                                                                              | <b>XTUBE ASSY (AW119 MKII AFT)</b>                                                                                                                                                                                                                                       | NTS          |
| DATE       | 17.02.10                                                                                                                                                                                                                                                        | COPYRIGHT © 2014 BY DART AEROSPACE LTD<br>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. |              |

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2017-05-04  
ECN 17-536

| ITEM | QTY | P/N             | DESCRIPTION                 |
|------|-----|-----------------|-----------------------------|
|      | X   | D119-796-241    | XTUBE ASSY (AW119 MKII AFT) |
| 1    | 1   | D119-796-241BND | CROSSTUBE, AFT              |
| 2    | 4   | D2873-043       | RADIUS BLOCK                |
| 3    | 1   | D5122-1         | CENTER SUPPORT              |
| 4    | 6   | D5123-1         | CLAMP CUSHION               |
| 5    | 2   | D5123-5         | CLAMP CUSHION               |
| 6    | 1   | D5134-041       | DAMPER SUPPORT ASSY, LH     |
| 7    | 1   | D5134-042       | DAMPER SUPPORT ASSY, RH     |
| 8    | 1   | D5136-1         | CONTACT PAD, LH             |
| 9    | 1   | D5136-2         | CONTACT PAD, RH             |
| 10   | 2   | D5152-043       | AFT POST MOUNT ASSY         |
| 11   | 2   | D5515-1         | GROUNDING CLAMP             |
| 12   | 16  | CR3212-4-07     | CSK RIVET, CHERRY MAX       |
| 13   | 6   | MS21920-25      | CLAMP                       |
| 14   | 2   | MS21920-28      | CLAMP                       |
| 15   | 2   | MS27039-1-08    | SCREW, PAN-HEAD             |
| 16   | 2   | MS21042-3       | NUT                         |
| 17   | 4   | NAS1149D0332J   | WASHER                      |



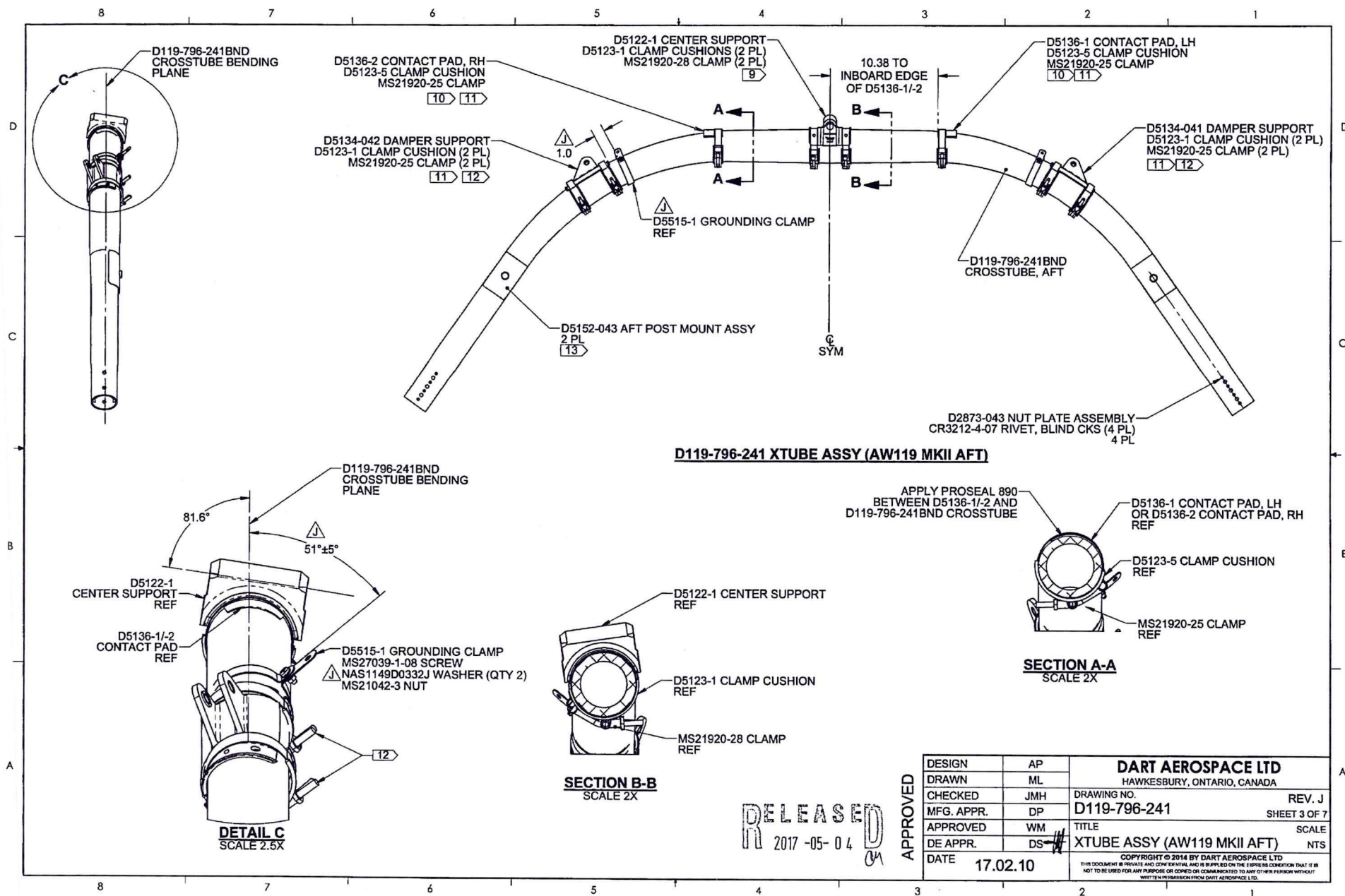
**D119-796-241 XTUBE ASSY (AW119 MKII AFT)**

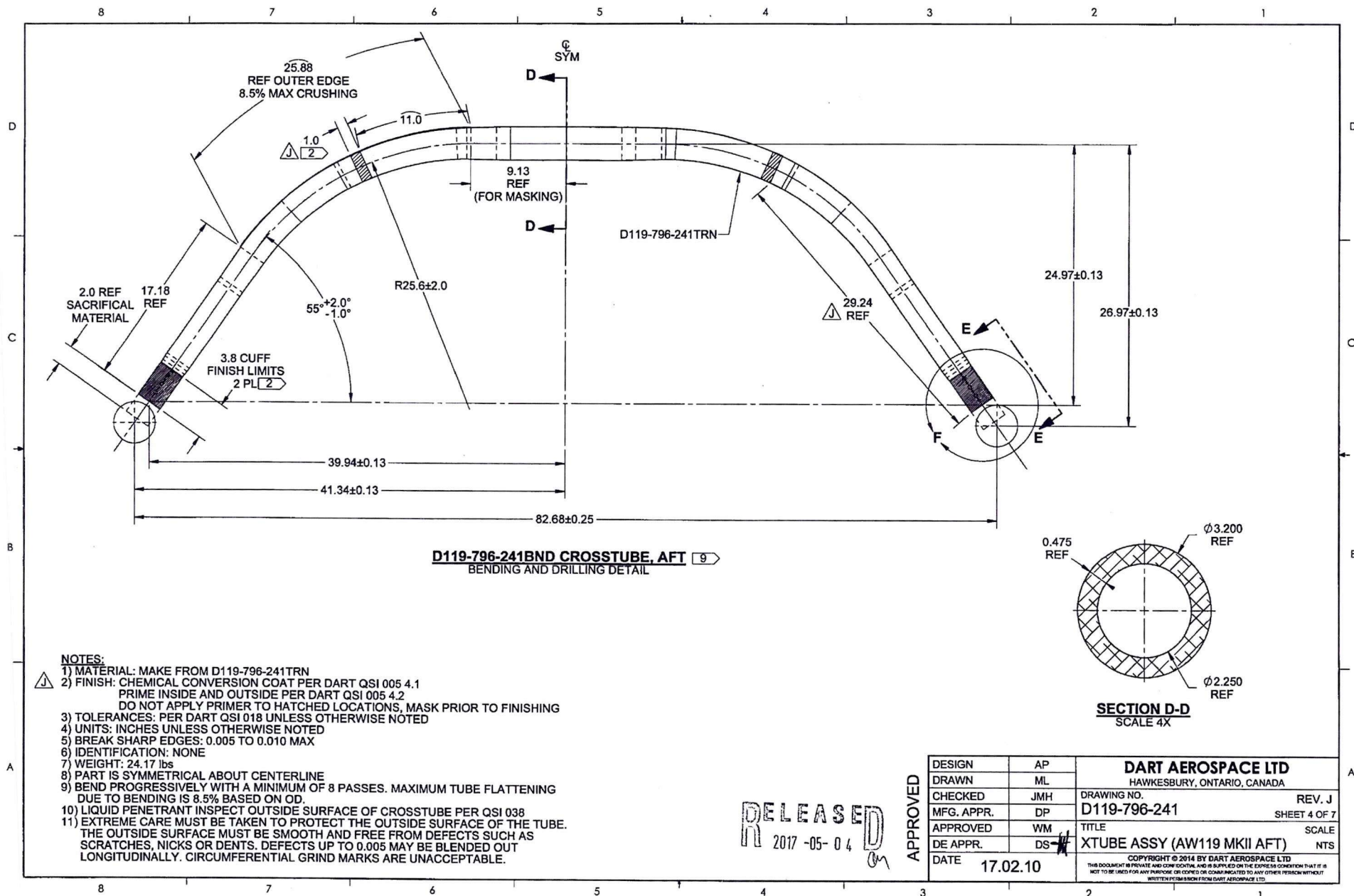
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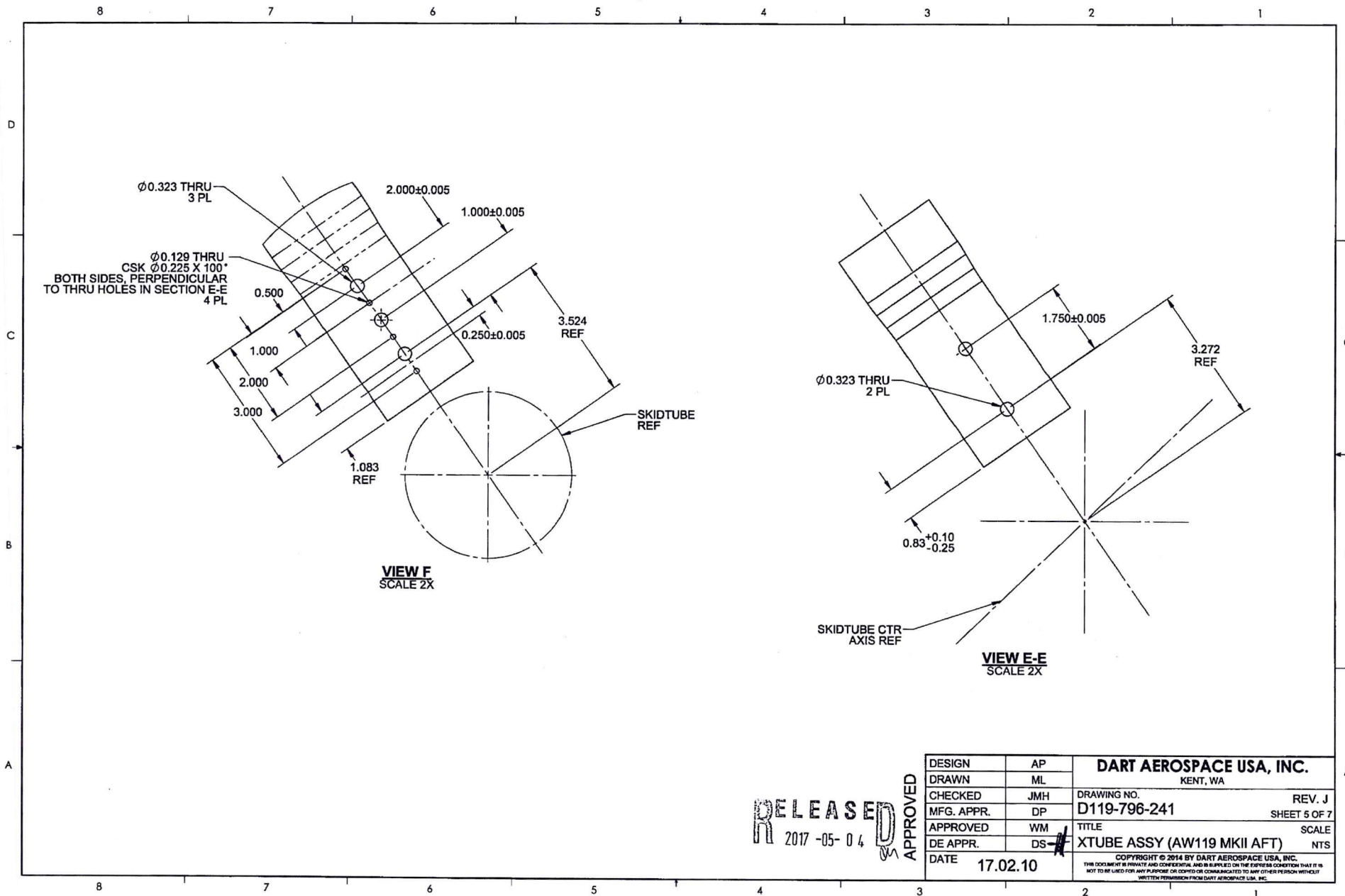
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|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| DESIGN     | AP       | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                            |              |
| DRAWN      | ML       |                                                                                                                                                                                                                                                                     |              |
| CHECKED    | JMH      | DRAWING NO.                                                                                                                                                                                                                                                         | REV. J       |
| MFG. APPR. | DP       | <b>D119-796-241</b>                                                                                                                                                                                                                                                 | SHEET 2 OF 7 |
| APPROVED   | WM       | TITLE                                                                                                                                                                                                                                                               | SCALE        |
| DE APPR.   | DS       | <b>XTUBE ASSY (AW119 MKII AFT)</b>                                                                                                                                                                                                                                  | NTS          |
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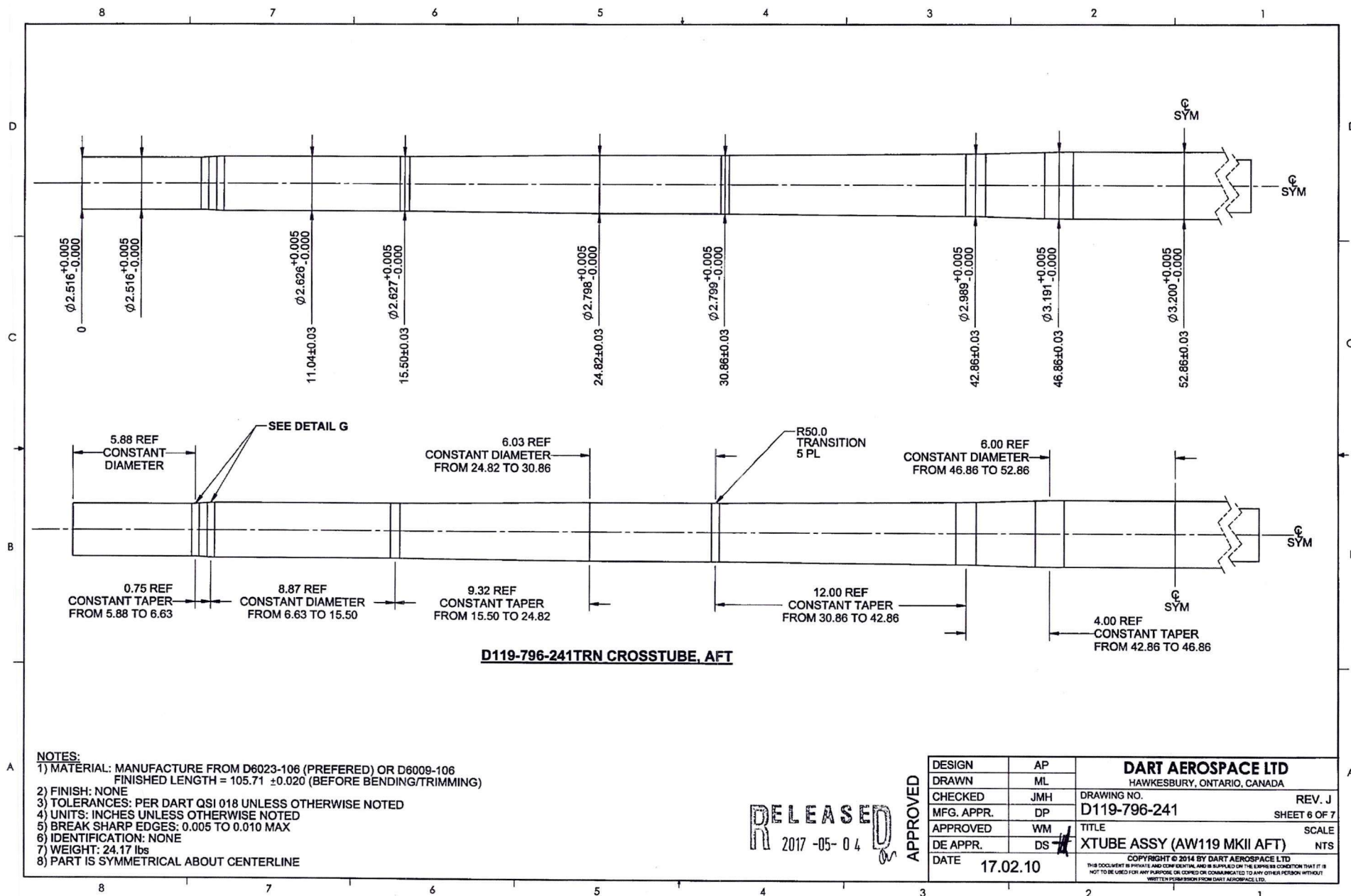




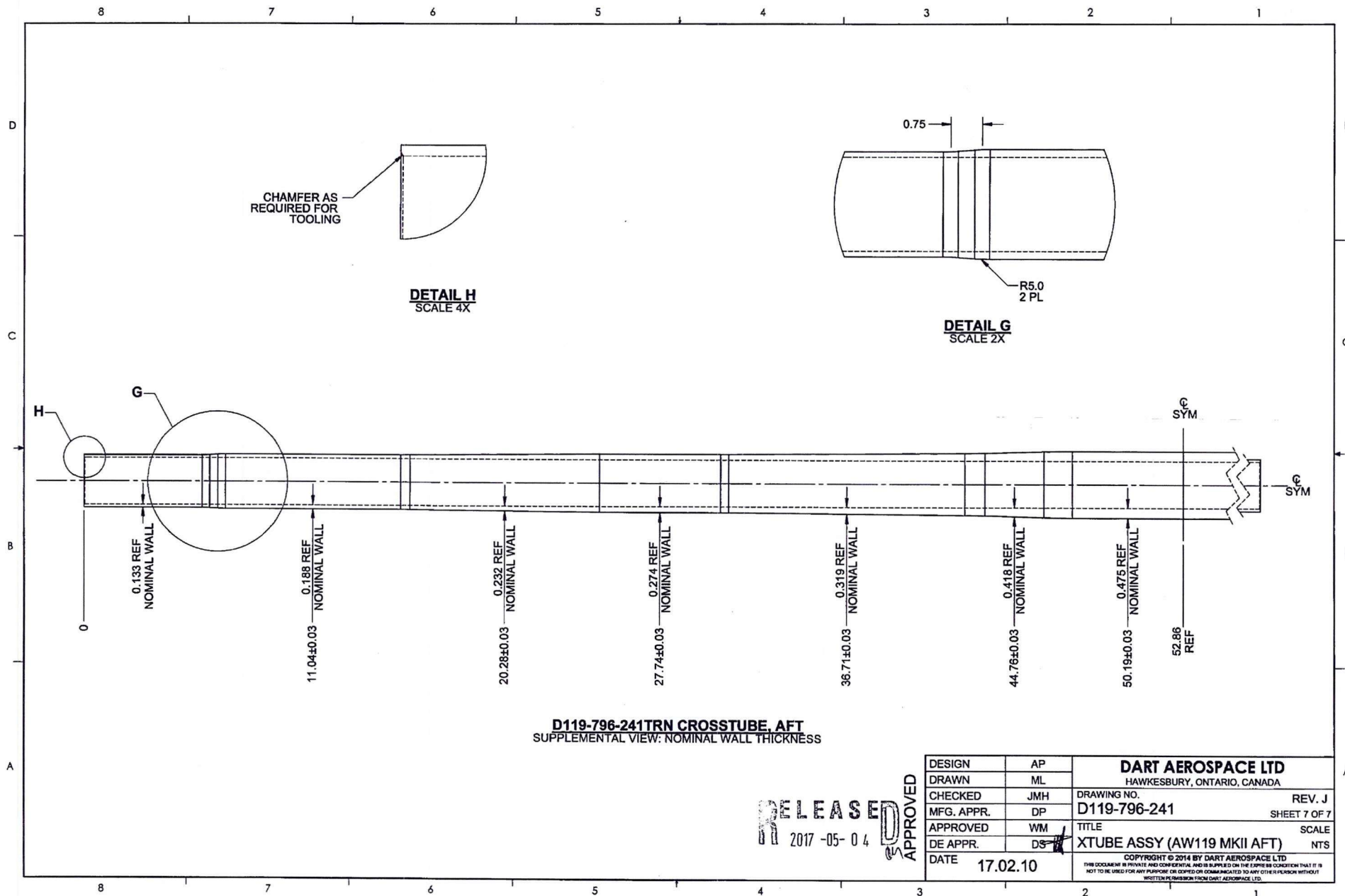


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2017-05-04

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Entered: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. \_\_\_\_\_

Route update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| Job: _____<br><br>Part No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/> | <b>DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/> </div> <div>           Eng. (Non-AW) <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Water Jet <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Quality <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                        |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sequence #:                                                                                                                       | QTY Affected :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | MRB (QSI042)           |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                   | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Completed By           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Lead hand / Supervisor |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | QC / QA Coordinator    |  |
| <b>Root Cause</b><br><br><div style="display: flex; flex-direction: column;"> <div>Operator <input type="checkbox"/></div> <div>Manufacturing Process <input type="checkbox"/></div> <div>Equip/Tooling <input type="checkbox"/></div> <div>Handling/Preservation <input type="checkbox"/></div> <div>Material <input type="checkbox"/></div> <div>Product Improvement <input type="checkbox"/></div> <div>Process Improvement <input type="checkbox"/></div> <div>Human Factors <input type="checkbox"/></div> </div> |                                                                                                                                   | <b>FAULT CATEGORY</b><br><br><div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Pressure/Forced<br/> <input type="checkbox"/> Bending<br/> <input type="checkbox"/> Crushing<br/> <input type="checkbox"/> Cracks<br/> <input type="checkbox"/> Crimp/Kink/Ripple/Wave/Twist<br/> <input type="checkbox"/> Marks/Chatter<br/> <input type="checkbox"/> Mislabeled         </div> <div style="width: 50%;"> <input type="checkbox"/> Contamination<br/> <input type="checkbox"/> Misaligned/off center<br/> <input type="checkbox"/> BOM/Route<br/> <input type="checkbox"/> Broken/Damage/Defect<br/> <input type="checkbox"/> Incomplete/Unclear Instructions<br/> <input type="checkbox"/> Drill Holes<br/> <input type="checkbox"/> Fit/Function         </div> <div style="width: 50%;"> <input type="checkbox"/> Power Loss/Surge<br/> <input type="checkbox"/> Folio/Program<br/> <input type="checkbox"/> Grain Direction<br/> <input type="checkbox"/> Weld<br/> <input type="checkbox"/> Wrong Stock Pulled<br/> <input type="checkbox"/> Out of Sequence<br/> <input type="checkbox"/> Off-set/Set-up         </div> <div style="width: 50%;"> <input type="checkbox"/> Positioned Wrong<br/> <input type="checkbox"/> Outside Tolerance<br/> <input type="checkbox"/> Drawing<br/> <input type="checkbox"/> Finish<br/> <input type="checkbox"/> Part Lost/Missing<br/> <input type="checkbox"/> Misread         </div> </div> |  |                        |  |
| Other/Details:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |